REAL TIME BUS TRACKING SYSTEM

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STUDENT'S DECLARATION

I hereby declare that the work in this thesis is based on my original work except for quotations and citations which have been duly acknowledged. I also declare that it has not been previously or concurrently submitted for any other degree at Universiti Malaysia Pahang or any other institutions.

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ABSTRAK

Rapid Kuantan adalah jenama bas milik Prasarana Malaysia Berhad untuk menjalankan perkhidmatan bas di Kuantan, Pahang, Malaysia. Apabila menaiki bas, orang ramai ingin tahu masa ketibaan mereka kerana kadang-kadang jadual bas tidak mempunyai kebolehpercayaan dari segi ketepatan masa. Salah satu masalah utama ialah pengguna bas tidak mengetahui masa sebenar bas ketibaan. Pengurusan bas hanya menyediakan jadual waktu bas untuk pengguna. Pengguna bas perlu keluar sebelum perhentian bas untuk menunggu bas. Ini kerana mereka tidak mahu ketinggalan bas yang mereka targetkan pada jadual waktu bas. Kadang-kadang, pengguna bas perlu menunggu terlalu lama untuk bas ketibaan kerana mereka tidak tahu masa yang tepat bas akan tiba dan ketika mereka ingin mengejar masa untuk alasan tertentu mereka akan menjadi marah. Dengan membazirkan banyak masa menunggu bas, masa itu sebenarnya boleh melakukan sesuatu yang bermanfaat. Objektif utama adalah menerapkan teknologi pengesanan GPS ke dalam sistem pengangkutan bas. Ini adalah untuk mencadangkan kepada admin bas untuk memasang aplikasi Sistem Penjejakan Bas yang dapat menjejaki kedudukan sebenar bas. Seterusnya, aplikasi ini akan menghantar data kedudukan bas ke pangkalan data dan data akan dipaparkan sebagai ikon bas bergerak di peta. Objektif seterusnya adalah untuk menyediakan lokasi sebenar bas yang berfungsi bergerak. Lokasi yang tepat akan membantu pengguna menguruskan masa mereka kerana tidak menunggu terlalu lama untuk bas. Sistem Penjejakan Bas Masa Sebenar telah dibangunkan dengan menggunakan kaedah Rapid Application Development (RAD). Ini kerana kaedah ini boleh membuat proses pembangunan pesat. Permohonan ini akan digunakan oleh ramai orang pada masa akan datang. Manfaat aplikasi ini dapat mengurangkan masa menunggu bas dan membantu orang untuk menetapkan waktu apa yang mereka akan tiba di destinasi.

ABSTRACT

Rapid Kuantan is a bus brand owned by Prasarana Malaysia Berhad to conduct bus services in Kuantan, Pahang, Malaysia. When travelling in buses, public want to know their exact arrival time because sometimes the bus schedule does not have the reliability in terms of punctuality. One of the main problems is the bus's user did not know the exact time of the arrival bus. Bus management only provide bus's timetable for the user. The bus's user needs to go out earlier to the bus stop to wait for the bus. This is because they did not want to miss the bus that they target at the bus's timetable. Sometimes, the bus's user needs to wait for too long for the arrival bus because they did not know the exact time the bus will arrive and when they want to chasing time for the certain reason they will become angry. By wasting a lot of time waiting for the bus, that time actually can do something else beneficially. The main objective is to apply GPS tracking technology into bus transportation system. This is to propose to the bus admin to install the Bus Tracking System application that able to track the actual position of the bus. Next, this application will be sending position data of the bus to database and the data will be display as moving bus icon on the map. Next objective is to provide the exact location of the moving working bus. The exact location will help user to manage their time for not waiting too long for the bus. Real Time Bus Tracking System was developing by using Rapid Application Development (RAD) methodology. It is because this method can make rapid development process. This application will be used by many people in the future. The benefits of this application are it can reduce bus waiting time and help people to set what time they will arrive at destination.

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LIST OF ABBREVIATIONS

ABBREVATION	TITLE
API	Application Programming Interface
APP	Application
APU	Asia Pacific University
GPS	Global Positioning System
IDE	Integrated Development Environment
NIU	Northern Illinois University
RAD	Rapid Application Development
RFID	Radio Frequency Identification
RTBTS	Real Time Bus Tracking System
SDD	Software Design Document
SDLC	Software Development Life Cycle
SRS	Software Requirement Specification
Wi-Fi	Wireless Fidelity

CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

Rapid Kuantan is a bus services owned by Prasarana Malaysia Berhad to conduct bus services in Kuantan, Pahang, Malaysia. Rapid Kuantan was launched on 1 December 2012.(MyRapid, 2012).

When travelling in buses, public want to know their exact arrival time because sometimes the bus schedule does not have the reliability in terms of punctuality. Thus, the bus arrival information system is a service that aim to provide a friendlier bus service. This project has been proposing to develop a prototype application for public to track the position of the bus by installing the application that been develop through out of this project. This application is able to receive and send GPS data, and bus distance.

1.2 PROBLEM STATEMENT

There is no easy way for travellers to check the location of buses in real time. Bus travellers want to know the bus's accurate arrival times because they tend to maximize their personal time to wait for the bus. Peoples usually go to the bus stop early to wait for the bus. Although the bus timetable is available for free on the Web, bus operators often do not follow, and another factor have been proved that the schedule provides limited information to the public. The peoples will disappoint when their miss a bus trip before, and the next bus service will cause them late for their arrangement. A long wait at the bus stop can make people angry and will make them unwilling to take the bus for the next day. In the end, they decide to use their own transport to go to other places, which resulted in increased traffic jam.

One of the main problems is the bus's user did not know the exact time of the arrival bus. Bus management only provide bus's timetable for the user. The bus's user needs to go out earlier to the bus stop to wait for the bus. This is because they did not want to miss the bus that they target at the bus's timetable. Sometimes, the user needs to wait for too long for the arrival bus because they did not know the exact time the bus will arrive and when they want to chasing time for the certain reason, they will become angry. By wasting a lot of time waiting for the bus, that time actually can do something else beneficially.

1.3 OBJECTIVE

The aim of this project is to develop an application what able to track the location of the bus by using GPS technology. In order to achieve this aim, the following objectives are listed:

i. To study how GPS can connect with application
ii. To design and implement the real time application that can track bus location.
iii. To test the proposed application in term of functionality.

1.4 SCOPE

The scope of this project is limited on bus trip number 100. GPS will be use as main technology in this project. The position of the bus is based on real time database.

1.5 THESIS ORGANIZATION

This thesis consists of five (5) chapters. Chapter 1 shall discuss about the introduction of the project. Chapter 2 would be Literature Review that discuss about the comparison with the other project that already exist and the compared technology used. Following by Chapter 3, Methodology shall discuss about methodology of the project. Chapter 4 will discuss about the implementation on develop this project. Also, testing will be performed in this chapter too. For the last Chapter is Conclusion for this project that will provides the summary of the report for this project.

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

There are many bus transportation services in every country, but many of them are lack of management system. In these days, majority of bus services are not performing the real time bus tracking system. This is because they only provide scheduled timetable to follow which are not accurate in real time. By having the GPS tracking system, it will describe the location of the current bus.

However, some countries have already succeeded in implemented the real time bus tracking system. There are many universities in oversea country that already implemented the bus tracking system for their shuttle bus service.

2.2 STUDIES ON EXISTING SYSTEMS

There are many existing bus tracking systems implemented by other universities. The university that already implemented this bus tracking system are Rice University, Northern Illinois University (NIU) and Asia Pacific University (APU) (LOONG, 2013).

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